

AMERICAN

OCTOBER • 1956

Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY



This Issue...

- The Idea Is the Foundation of the Film
- Method for Syncing the Pre-scored Playback
- Time-lapse and Telephoto: Probe Nature's Secrets

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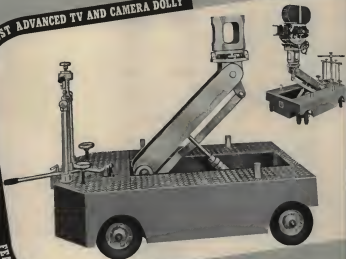
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Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY
PUBLICATION OF THE AMERICAN SOCIETY OF CINEMATOGRAPHERS

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ON THE COVER

ASSISTED by his attractive wife, outstanding photographer Robert Cray
dall uses a Cine-Special with a 35-inch focal length telephone lens on
great extension tube to film a close shot of an ant colony in the desert
for a scene in Walt Disney's True Life Adventure feature, "Secrets
of Life."

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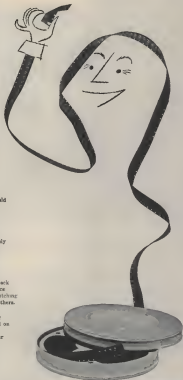
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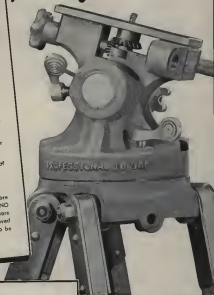
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GEORGE POLSEY, AIC
Twenty-four years at ASIM

George Folsey, AFI, president, who for twenty-four years has been one of Metro-Goldwyn-Mayer's top directors of photography, was assigned to a new term contract by that studio last month. Coincidentally, he was handed the assignment to photograph MGM's "Painted Veil," to be filmed in the Orient and flew to Hong Kong October 5th to scout locations and prepare for production shooting. Assignment marks Folsey's first photographic chore outside the United States.

Sidney Lund, ASC, head of the Camera Department at Universal-International, reports that studio will shoot all future black-and-white productions in CinemaScope beginning October 1st.

Hal Mohr, ASC, was engaged by De Moya to direct the photography of the annual Hollywood demonstrations of its Eclairtrama video-film camera system, (described in *American Cinematographer*, May, 1955, issue), which took place October 1st at the Paramount-Sound studio. Invited to the demonstration were members of the Screen Directors' Guild, Screen Producers' Guild, American Society of Cinematographers, producers of television films and the general press.

The system was used last season by Jackie Gleason in putting his half-hour "Honeymooners" TV show on film. Du Mont works to interest both feature and TV film producers in Hollywood in the

equipment, salient feature of which is its electronic viewing system.

John MacBumie, ASC, a director of photography at Republic Studios for the past twenty years, died of a heart attack September 21. For the past three years he has photographed most of Republic Productions' TV film series, which are produced on the Republic lot.

Jefferson J. Ross, ASC, veteran cinema-
tographer whose start in the business
dated back nearly 40 years, passed away
in Hollywood's Cedars of Lebanon Hos-
pital September 23, following a long
illness.

Rose began his association with the film industry as a cameraman for the old *Esquire* Club.



Jackson, Ross

Goldwyn Mayer. Rose moved to the Lubert City lot. Retiring a few years later, Rose devoted all his time to editing and publishing the *American Cinematographer Handbook*.

He had been a member of the American Society of Cinematographers since its inception and over the years was active in its management.

The ASC last month elected the following cinematographers to active membership:

Torben Johske, New York City, who has been a free-lance cameraman in the New York area since 1933.

Mr. Jess Kutz, also of New York, who has specialized in photography of sports events, hasn't missed a World's Series or Kentucky Derby since 1927.

Ralph Woosley, Van Nuys, Calif., a steelhead cameraman since 1947, now actively engaged with Wide World Pictures, Hollywood. He has also served on the faculty of the Cinema Dept. at University of Southern California.



NBC Cameraman "BILL" HARTIGAN films...

Operation DEEPFREEZE

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WILLIAM B. HARTIGAN, NBC's Television News Cameraman, interviewed on his return from the frozen continent of Antarctica, said he filmed 52,000 feet of Auricon Sound-On-Film in color near the South Pole, with "Operation Deepfreeze."

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HARTIGAN'S AURICON SOUND FILMS were the first pictures of any kind to be flown to the waiting press and television news broadcasters, telling of the hazardous life led by courageous explorers on Antarctica.

"SUCCESSFUL PERFORMANCE under rigorous below-zero conditions," is the praise Hartigan gives his "Auricon Pro-600." Even after his Auricon was accidentally submerged in water, the Camera was dried out and operated normally.

AURICON DEPENDABILITY On "Operation Deepfreeze" is another example of how Cameramen all over the world rely on Auricon for professional picture and sound-track in the production of Television Newsreels, as well as Film Commercials, Dramatic Inserts, and local Sound-Film programming.

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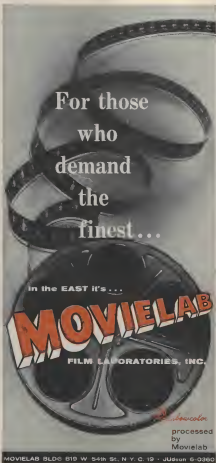


MR. J. A. TANNEY, (left, President of S.O.S. Cinema Supply Corp., New York City, who supplied the Auricon Equipment and Accessories for "Operation Deepfreeze," discusses with NBC's William B. Hartigan the successful belowzero performance of the "Auricon Pro-600" Sound-On-Film Recording Camera.

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A fast, inexpensive method of winding film from reels to cores, or from one core to another, is provided by the new CECO Aluminum Split-Apart Reels, available from Camera Equipment Co., 515 West 43rd Street, New York, N.Y.

Reels are available in 16mm and 17.5mm sizes in capacities of 500 and 1200 feet, and 1000-foot 35mm reels. Prices range from \$4.20 to \$7.50.

New 8mm Projector

A new model of the Monterey 8mm movie projector (the model 253 AR Deluxe with reverse and still picture operation) has been announced by Bell & Howell Co., Chicago, Ill.

New model is similar to original Monterey projector with the addition of a reverse and still picture control. A safety shutter protects film from heat during still picture projection. Because of the fixed-lens framing feature, it is unnecessary to re-adjust the tilt when framing.

List price is \$99.95, which includes Federal excise tax.

Mark IX Recorder

Magnasync Mfg. Co., Ltd., North Hollywood, announces availability of its latest improved magnetic recorder—the Mark IX Magnascope, which is scheduled to be demonstrated at the SMPTE Convention in Los Angeles this month.

The Mark IX is a synchronous magnetic film system which features a remote control box through which the entire system may be push-button operated, and which also incorporates a footage counter and switching controls for amplifier and meter. The portable cases are light, sturdy, aluminum alloy.

Animation Stand

A new, low-cost animation stand, manufactured by the Tel-Animastand, is announced by S.O.S. Cinema Supply Corp.

Equipment is ideal for production of cartoons, titles and special effects by TV stations, small film producers and educational institutions.

Any 16mm or 35mm camera may be mounted on its movable, counter-balanced vertical carriage. Compensated table

(Continued on Page 620)

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TECHNICAL

QUESTIONS & ANSWERS

Conducted by Walter Streng, A.S.C.



QUESTIONS relating to cinematography or other phases of film production are invited from readers and will be answered by letter by Walter Streng or by other qualified members of the American Society of Cinematographers. Questions and answers considered of general interest will appear in this column.—Ed

Q I am often confronted with the problem of using a telephoto lens to capture closeups of wildlife, then following these closeups with shots at closer range, using the same lens. This I am unable to do, however, because the lens focusing mount will not extend the distance required. I don't want to use a longer tele lens because such lenses are usually too slow for color photography. Lens extension tubes also diminish the effective aperture. What a painless loss does my problem?—L.M.S., Lansing, Mich.

A poet's lens might be the right answer. You may find, however, that an schematized auxiliary lens may be necessary. I have used this technique with very satisfactory results.—Benton Rock, A.S.C.

Q In the 20th Century-Fox picture, "Blossoms of Santhipha," how were those scenes produced that show the waves of water engulfing the streets, with people being overrun and inundated by the gigantic flood of water? These scenes appeared to be not medium shots or closeups, nor made by rear projection or process, but long shots of entire streets.—J.J., Detroit, Mich.

The scenes referred to were made by the trailing mist technique. By this method, a moving object (in this case, the wall of water) is separated from its background and composited with another scene (in this case the street crowded with terrified people).

Actually a great deal of pre-planning was necessary in order to make everything come out right. It was necessary to build a miniature set that conformed exactly with the full-size street. Thus, we were able to keep the water currents, its direction of flow and its form compatible with the characteristics of the full scale street.

The miniature street set had to be photographed from the same identical angle as was the footage shot on the full scale street; and the flow of water on

the miniature set was shot at high camera speed so that its movement and general characteristics would approximate that of moving water shot in full scale.

After the full scale scenes showing the people running and reacting to the imaginary flood waters were filmed, they were combined in the laboratory with the scenes shot in miniature. Here the important third step took place—that of matte painting. The full-scale street used had many modernistic buildings that were inappropriate to the story locale. These were matted out in the film and new structures painted and double exposed into the finished shot.

There are several methods by which traveling mattes are made. All are much too complicated to describe in detail here.—Ray Kellog, Head, Special Photography Effects, 20th Century-Fox.

Q Realizing that the Japanese have to date far outstripped other countries in artistic achievement of color in their theatrical films, is there any explanation as to these successful techniques? To what extent are filters responsible for the effects that appear extraordinarily superb in Japanese color films? What else do the Japanese utilize along with filters? Why are experts to American cinematography?—R.A.P., New York, N.Y.

It is impossible to answer a question that is not a question at all but a statement expressing the reader's personal opinion about Japanese cinematography. Inasmuch as the appreciation of any art form—be it color photography, caricature, oil painting, sculpture, etc.—is a matter of one's individual taste, reader R.A.P. is privileged to manifest his opinion. However, if he will honestly review the achievements of American directors of photography—achievements resulting from many years research and experiment—he will realize the effrontery of his alleged query.—Leon Sharkey, A.S.C.

R.A.P.'s statements (questions?) find no support among professional cinematographers in Hollywood. Nor does the vote of the Academy of Motion Picture Arts and Sciences, which annually awards "Oscars" for outstanding achievement in motion picture photography, support his claims.

As he failed to name the Japanese pro-

(Continued on Page 32)



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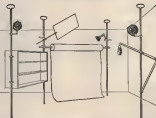
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Photographic Assignments

SEPTEMBER • 1956

Who, where and what the industry's cameramen were shooting last month.

Articles indicate television film production

ALLIED ARTISTS

- **William Mellor, ASC**, "Love in the Afternoon" (shooting in Paris) with Gary Cooper, Audrey Hepburn and Maurice Chevalier. Billy Wilder, producer-director.

AMERICAN NATIONAL

- **Monroe Adams**, "West Point Story," (Ziv-TV) John Stuhler, director; "De Ursonian," (Ziv-TV), Paul Gillette, director; "Highway Patrol," (Ziv-TV) with Brook-trick Crawford. Eddie Davis, director.
- **Ron Heyman**, "Science Fiction Theatre," (Ziv-TV) Eddie Davis, director; "Highway Patrol," (Ziv-TV) with Brook-trick Crawford. Herb Strick, director; "De Ursonian," (Ziv-TV) Paul Gillette, director.

- **Lois Fetter**, "Science Fiction Theatre," (Ziv-TV) Eddie Davis, director; "De Ursonian," (Ziv-TV) Barry Kessler, director; "Highway Patrol," (Ziv-TV) with Brook-trick Crawford. Lee Landers, director.

CALIFORNIA STUDIOS

- **Rui McLean**, "O Henry Fictions," (Gross-Krone, Inc.) with Thomas Mitchell Peter Gentry and Barney Girard, director; "De Hidden's Secret Journal," (Warner, Inc.) with John Howard. Peter Gentry, director.

- **LeRoy Anderson, ASC**, "The Life of Riley," with William Bendix. Abby Berlin, director.

- **Louisa Swann, ASC**, "Adventures of Huckleberry Finn," (Gross-Krone, Inc.) with Wally Cox. Philip Rapp, director.

- **Kenneth Francis, ASC**, "Masters of the Gun," (Gross-Krone, Inc.) Albert McQuay, director.

CATHART SOUND STAGE

- **William Whittier, ASC**, "The Lone Ranger," with Clayton Moore and J. Soderchist. Earl Bellam, director.
- **Gl. Warrenton, ASC**, "The Hanging Judge," with Willard Parker and Mara Corday. Edward Davis, director.

COLUMBIA

- **DeWitt Dickinson**, "Face Down Below," (Warwick Prod. shooting in Trinidad) with Rex Hysworth, Robert Michman and Jack Lemmon. Robert Farnish, director.
- **Gary Anderson, ASC**, "Find Theatre," (Screen Gems) James Nelson, director.
- **Burt Emmett**, "Towls On Trial," (Marking Film shooting in London), with John Mills, Charles Coburn, and Elinor Kamen. John Gullerme, director.
- **Tim Moore**, "Interpol," (Technicolor-Warwick Prod. shooting in Rome) with Victor Mature and Anna Ekberg. John Gilling, director.

- **Ben Aronson**, "The Story of Esther Costello," (Warwick Films, Ltd. shooting in London) with Jean Crawford and Roscoe Brown. David Miller, director.

- **Herman Freulich, ASC**, "The 27th Day," with Valerie French and Gene Barry. William Asher, director.

- **Ben J. Krue, ASC**, "Rhythm and Blues," with Bill Haley and Alan Dale. Fred F. Sears, director.

- **Fred Jackson**, "Run, Tie, Tie," (Screen Gems) with Lee Aaker, and James Brown. Robert Walker, director; "Rough Riders," (Screen Gems) Richard Hayes, director.

- **Kit Carson**, "Turkey Knives, Best," (Screen Gems) with Robert Young and Jane Wyatt. Jacques Tourneur, director.

- **Ronald Farnham, ASC**, "Find Theatre," (Screen Gems) Danny Day, director.

WALT DISNEY

- **Gordon Ayl, ASC**, "The Mickey Mouse Club," Sal Miller, director.

- **Walter Catlett, ASC**, "Spla and Marty," William Bendix, director.

- **Charles Boyle, ASC**, "Johnny Tremain," Robert Stevenson, director.

FELMCAUT STUDIOS

- **Vincent Melillo, ASC**, "Yes, But Your Life," (Hemlock Prod.) with Genevieve Marie. Robert Davis, director.

FOX MOVIEHOME STUDIOS (New York)

- **J. Burt Foster, ASC**, "Jill Corey Show," (Gold Medal Prod.) Marc Demme, director.

FOX WESTERN AVENUE STUDIOS

- **Karl Struss, ASC**, "Broken Arrow," with John Lupton. Vernon Sorenson.
- **Lytle Austin, ASC**, "You Are There," William Russell, director.
- **Charles Van Engle, ASC**, "T.C. Hart," Vernon Sorenson.

GENERAL SERVICE

- **James Van Tass, ASC**, "Beverly Hills Show," (McCadden Prod.) with Grace Allen and George Burns. Rod Amateau, director; "Catalina," (McCadden Prod.) with Jackie Kennedy. Rod Amateau, director.
- **Helen Wild, ASC**, "The Cameraperson Show," (Laurie Prod.) with Bob Cameraperson and Rosemary DeCamp. Norman Tokar, director.
- **Philip Tanaka, ASC**, "The People's Choice," (Northern Prod.) with Jackie Cooper and Pat Hingle. Jackie Cooper, director.

(Continued on Page 389)

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PHOTOGRAPHIC ASSIGNMENTS

(Continued from Page 588)

• NEAL BELGIVER, "The Adventures of Ozile and Harriet," (Stage 5 Productions) with Ozile, Harriet, David, and Rocky Nelson. Ozile Nelson, director.

• FRANK PHILLIPS, "Navy Log," (Gulf Productions, Inc.) Various directors.

GOLDWYN STUDIOS

• NORMAN BENNETT, ASC, "The Lassie Young Show," (Lewiston Inc.) with Lassie Young. Various directors.

• EDWARD FENSTERMAK, ASC, "Crossroads," (Federal TV Inc.) Various directors.

INDEPENDENTS

• FRANK PLUMER, ASC, "The Pride and the Passion," (Technicolor, VistaVision) Stanley Kramer Prod. for UA, shooting in Spain with Cary Grant and Frank Sinatra. Stanley Kramer, producer-director.

• HERBIE HAYES, "Snowed," (McGowan Production Studio) with Don Miller, and Melody McGowan. Stuart McGowan, director.

• GORDON ROTHMAN, "The Monte Carlo Story," (Thuma Prod. showing in Monte Carlo for UA release) with Valerie De Sosa and Martina Dennis. Samuel Taylor, director.

• FLOYD CRONE, ASC, "Black Red," (Jenny O. Rufford, Inc. showing in Miami) with Ed Card and Lisa Merrill. Roger Cronan, producer-director.

• ALAN SHAWGOLD, ASC, "The Fever Tree," (Swley Pictures showing in Cuba) with John Cullum and Sam Shere. Luke Benedict, director.

• JOSEPH LAMALLE, ASC, "The Bachelor Party," (UA release, Norma Productions) with Don Murray, E. G. Marshall and Jack Warner. Delbert Mann, director.

• FRED WEIN, ASC, "Shake, Rattle and Rock," (Sunset Prod., American Int'l release) with Rosemary and Touch Connors. Edward L. Cuba, director.

• BILL THOMPSON, ASC, "New Refugee," with Jacques Sorel and Jean Ann Levin. Robert C. DeSiano, director.

• LINDA WELLS, ASC, "The Kidnab," (Lary Gordon Lewis for UA release) with Tim Bick and Audrey Dalton. Arnold Levin, director.

• LEOVIN LINDBA, ASC, "The Big Caper," (Pac-Thomson for UA release) with Eric Colson and Mary Costa. Robert Stevens, director.

• WILLIAM MARCELLIN, "Gambling Man," (Bel Air Prod. for UA release) with Gene Clark and Left Nelson. Lesley Schlander, director.

• HAL MALKIN, "Prisoners," (Goss-Kinross Prods. Features color, independent) with Gregg Montgomery and Lida Albright. George Waggoner, director.

• EDWARD FENSTERMAK, ASC, "Trooper Hook," (Purling Prod. for UA release) with Joel McCrea and Barbara Stanwyck. Chas. V. Warner, director.

• RICHARD BRYNA, "Man on a Motorcycle," (Jara Film Enterprises Prod.) with Jim Best and Mike Pevan.

• GUY ROSE, ASC, "Back country," (McGraw-Hill Prods. Eastman color at Detroit Posing Grounds) Jack Hylke, director.

(Continued on Page 592)

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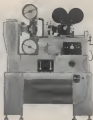
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PHOTOGRAPHIC ASSIGNMENTS

(Continued from Page 350)

KITV

• **STUART THOMPSON, ASC**, "Lunar," (Robert Maxwell Productions) with Jan Clayton and George Cleveland. Les Schaefer, director.

• **JOHN MARLEY, ASC**, "Wild Bill Hickok," (Wes Brandy Productions) with Guy Madison and Andy Devine. Will Jason, director.

• **MARK STENZLER, ASC**, "Captain David Galt," (Gold Films, Inc.) Duke Goldstone, director.

METRO-GOLDWYN-MAYER

• **ROBERT SEXTON, ASC**, "Rhinoceros County," (Sound and Color) with Montgomery Clift and Elizabeth Taylor. Edward Dmytryk, director.

• **EDMUND HANLEY, ASC**, "Something of Value," (showing in Africa) with Rock Hudson and Betsy Winters. Richard Brooks, director.

• **PAUL VOGEL, ASC**, "The Wings of Eagles," with John Wayne, Dan Doherty and Maureen O'Hara. John Ford, director.

• **HAROLD MARGENTHAL, ASC**, "Slender," with Van Johnson and Ann Blythe. Roy Rowland, director.

• **ROBERT BATTENBERG, ASC**, "Harvest Thunder," (SunScope & Color, showing in France) with Mel Ferrer and Paul Anka. Jeffrey Hayden, director.

• **ROBERT BENDISER**, "Ten Thousand Bedrooms," (SunScope and color-shooting in Rome) with Dean Martin and Anne Marie Albrecht. Richard Thorpe, director.

• **ROSE ALTON**, "Dancing Queens," (ColorScope and Color) with George Rock and Louisa Bards. Vincente Minnelli, director.

• **PAUL JEVINS**, "Home," (Revue Productions) with Eleanor Parker and Richard Boone. Hugo Haas, director.

NECARD STUDIO (New York)

• **MORRIS HARRISMAN**, "Rock, Rock, Rock," (Vanguard Productions) Wall Price, director.

MOTION PICTURE CENTER

• **NE HARRIS, ASC**, "I Love Lucy," (Dandy Productions) with Lucille Ball and Desi Arnaz. James Kern, director. "December Bride," (Dandy Productions) with Spring Byington, Dean Jagger, Frances Rafferty, Jerry Thayer, director.

• **ROBERT McGRATH, ASC**, "The Danny Thomas Show," (Dandy Productions) with Danny Thomas, Sherry Jackson, Sheldon Leonard, director. "The Brothers," (Dandy Productions) with Gale Gordon. Hy Averback, director.

• **WALTER GINSBURG**, "Shore of Corals," (Dandy Productions) with John Bromfield. Lee Shubin, director.

• **JAY NOVELL, ASC**, "Wise Service," (Dandy Productions) with Dana Clark. Victoria directors.

• **CHARLES STRAUSSER**, "Adventures of Jim Bowie," (Dandy Productions) with Scott Forbes. Lewis Foster, director.

(Continued on Page 354)

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PHOTOGRAPHIC ASSIGNMENTS

(Continued from Page 52)

PARAMOUNT

• SAM LEWIS, ASC, "Flamingo," (VistaVision and Color) (Being photographed in Spain) with Carmen Sevilla and Richard Kiley Don Siegel, director

• JACK WARREN, ASC, "Bess Jones," VistaVision and Color, with Bob Hope and Vera-Allen Mel Shavlovsky, director

• HERSCHEL BROSSE, "The Delicate Delinquent," (VistaVision) with Jerry Lewis and Martha Hyer Don McGuire, director

• ED CORMAN, ASC, "Nashville," (Mark VII Productions) with Paul Burke Jack Wells, director

• JERRY MACBERG, ASC, "Jane Wyman Show," (Lewiston Productions) with Jane Wyman, Sidney Lanfield, director

• JOHN RUSSELL, ASC, "On Trial," (Fox-Decca Inc.) with Joseph Cotten Various directors, "The Middleman," (Don Freedman Productions), Al Gorn, director; "Hell's Greenade," (National) with Stephen McNally and Peggy Castle Franklin Adreon, director

• WILLIAM SCHERER, ASC, "Alfred Hitchcock Presents," Jules Bricken, director; "On Trial," (Fox-Decca Inc.) with Joseph Cotten Various directors

• BRUCE LANNING, "Alfred Hitchcock Presents," Robert Stevenson, director

• ROBERT POTTS, ASC, "General Electric Theatre," with George Gobel Bill Douglas, director

• BERT KROPPSTEIN, "The Crusader," (RKO Productions) Allen Miner, director

• ELLIS TRUMBULL, ASC, "Frontier Doctor," (Studio City TV) with Rex Allen William Whitney, director

• RAY ROSSMAN, ASC, "On Trial," (Fox-Decca Productions) with Joseph Cotten Various directors

• VIRGIL MILLER, ASC, "Do You Think You're Wise," (Don Freedman Productions) with Edgar Bergen Jim Morgan, director

HAL ROACH STUDIOS

• JACK MACDONALD, ASC, "Code 3," Various directors

• PAUL EVANS, "Stories of John Noddy," with John Noddy Various directors, TV, with John Noddy Various directors

• LUTHER WORTS, ASC, "The Gale Stern Show," with Gale Stern and Zella Paro Various directors

RKO

• ROBERT FRANCK, ASC, "The Girl Most Likely," (Eastman color) with Jane Powell and Cliff Robertson Mitchell Leisen, director

• LUCIEN BALLARD, ASC, "The Lady and the Powder," (color) with Dana Dore and Rod Steiger John Farrow, producer-director

20TH CENTURY FOX

• JACK HILLMAN, "Arabian," (Debut color, CinemaScope) (Shooting in London) with Ingrid Bergman and Yul Brynner, Anatole Litvak, director

• JOE BANC, ASC, "Black Whip," (Regal Films), CinemaScope with Hugh Marlowe and Colton Gray, Charles H. Warren, director

• DAVID MOUNT, "Hush! Knows Mr. Allison," with Deborah Kerr and Robert Mitchum John Hare, director

• LEO TOWSE, ASC, "Love Me Tender," (CinemaScope & Color) with Richard Egan and Helen Fagan, Robert Webb, director

• JIMMY MACDONALD, ASC, "True Story of Jesse James," (CinemaScope and Color) with Robert Wagner, Jeffery Hunter and Hope Lang Nicholas Ray, director

• CHARLES CLARKE, ASC, "Three Brave Men," (CinemaScope) with Ernest Borgnine, Ray Milland and Diane Jergins Philip Dunne, director

• LEON SHARON, ASC, "The Girl Can't Help It," (CinemaScope) with Tom Ewell and Joyce Manfield Frank Tashler, director

• JOHN MCCAUL, "Fare at Rock River," (Regal Films) with Forrest Tucker and Maria Corday William Claxton, director

• MILTON KRASNER, ASC, "Boy on a Delphin," with Alan Ladd, Helen Webb and Sophia Loren Jean Negulesco, director

• JOHN BOYLE, ASC, "The Reddest Devil," (Eastmancolor, National Patterns) with Scott Brady and Anne Francis Allan Dwan, director

UNIVERSAL - INTERNATIONAL

• CARL GUTTER, ASC, "The Tattered Dress," (CinemaScope) with Jeff Chandler and Jeanne Crain, Jack Arnold, director

• GEORGE ROBINSON, ASC, "The Night Runner," with Ray Danton and Colleen Miller, Abner Biberman, director

• BENJAMIN MATTY, ASC, "Man Afraid," (CinemaScope) with George Nader, Tom Herry and Philip Thaxter, Harry Keller, director

• WILLIAM DANFORD, ASC, "Night Passage," (Technicolor) with James Stewart and Dianne Foster James Neilson, director

• ELLIS CARLIS, ASC, "The Last Unknown," (CinemaScope) with Jack Hainsworth and Sherry Smith Virgil Vogel, director

• MAURY GORTMAN, ASC, "Papa Cola commercials," with Polly Bergen, Ed Cowan, director Chevrolet commercials with Doree Shain, Ed Cowan director

• IRVING GLASSBERG, ASC, Anderson & Clayton commercial, Ed Cowan, director

• CHARLES WELLS, Ford commercial, with Tennessee Ernie Ford, director; Eastman Kears commercial, Jack Daniels, director

(Continued on Page 63)



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"It was 11:15 p.m., about the time a normal day comes to an end," writes Charles Sciurba, prominent Milwaukee newsreel photographer. "Suddenly, my police radio flashed—fire on Market Street... tenement fire... big blaze. I arrived on the scene with the first fire engines—needed my Arriflex—and shot like crazy."

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Industry NEWS

Techniscope, the new large screen system developed by Technicolor and sold to motion picture producers as a product of the Technicolor Companies, employs standard 35mm negative which moves horizontally through the camera exposing an area of performance in length, similar to VistaVision. An anamorphic or CinemaScope-type Technicolor release print made from Techniscope negative allows for maximum use of the available positive frame.

The quality of all productions filmed in Techniscope will be controlled by Technicolor Laboratories.

Scholarships for two engineering students at his alma mater, Lehigh University is being offered by Byron Reynolds, president of Byron, Inc., Washington, D. C.

The scholarships are awarded each year to junior students in any phase of engineering, and the aid continues through his senior year.

A semi-professional course in every phase of motion picture and TV production is offered McGill University students by Associated Screen News Ltd., Toronto, Canada. The purpose is to create a new source of creative and technical personnel for Canada's booming motion picture and television industry.

An effort will be made to provide summer vacation employment with Canadian producers for those students desiring a career in the industry.

Producers Service, Inc., is new organization formed in Washington, D. C., to supply production camera crews and related services such as sets, props, talent, etc., to motion picture producers working in the East Coast area.

Heading the organization are Glen Johnston, formerly cinematographer for Byron, Inc., and Richard Norling, also a former Byron cameraman.

All members of the organization are affiliated with the LATSE. A complete range of camera and lighting equipment will be available, as will recording services and sound stage space.

Producers Service, Inc. (now related to Producers Service Co., Burbank, Calif.) is located at 1507 M Street, N.W., Washington, D. C.

Foreign language films will henceforth be eligible for Academy Awards consideration, according to decision of Academy announced by president George Seaton.

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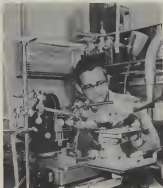
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ROBERT CRANDALL in his home laboratory where much of the 16mm color footage of ants was photographed for Walt Disney's "Secrets of Life." The mass of apparatus enables Crandall to effectively control lighting, atmosphere and humidity to suit his subjects. The Cine Special used to record the ants highly magnified is shown in background.

MRS. CRANDALL, who assists Bob in his home laboratory, focuses the Cine Special equipped with a super, slender telephoto lens—actually a giant extension tube—an ant subject magnified is shown in background. (All photos copyrighted by Walt Disney Productions.)



Time-lapse And Telephotos Probe Nature's Secrets

Eighteen of the country's top naturalist-cinematographers contributed rare and skillfully photographed studies of plant and minute animal life for Walt Disney's "Secrets of Life."

TO GET THE fascinating material for "Secrets of Life," his most extravagant True-Life Adventure film, Walt Disney commissioned eighteen top-ranking naturalist cameramen to concentrate their cameras on the lower levels of animal existence and Nature's most closely guarded mysteries.

The range of this latest naturalist-photographer's report is literally world wide, extending from our doorstep to the farthest horizons. Several years were spent in sifting out obscure facts in underground tunnels, in oceanic depths, tidal marshes and wild gardens to compile this spectacular vision of a world so close about us yet so remote to common knowledge.

It has remained a secret world largely because its den-

izens are comparatively small, many of them almost invisible. Yet here in violent competition for existence, whipped by the basic passions of universal life, are some of the fiercest, strongest, strangest, most gorgeous and most highly socialized and strictly governed beings in our universe.

Under the naturalist's magnifying camera lenses and "cold" light, these filiputs take on the proportions of elephantine mammals—of lions, tigers, giraffe, rhinoceros in whose eyes we, too, are small, impudent and terrible fellow-creatures.

The wondrous world of vegetation with its flowering and seeding and miraculous devices of physical immortality is also depicted in rare photography that often extended over a

period of months for a single growth phase. And the interrelation between these two great orders for mutual benefit in food sources and the mysteries of pollination or primitive sex functions is stressed. For these purposes the photographers had always to move with a swiftness to catch and record every fleeting act and impulse of living things, and again with a skillful use of stopaction photography to make vegetative growth seem like a swift continuous act from germinating seed to ripened fruit and falling seed again.

Many of the eighteen naturalist-cameramen who contributed footage for "Secrets of Life" are veteran cinematographers with many years' experience in furnishing Walt Disney with subject matter for his True-Adventure films. Operating like trained crime lab technicians and police stake-out squads, these naturalist-photographers have solved with patiently-made motion pictures some of nature's most mystifying cases of violence in the animal underworld. From long observation and patient stake-out in hidden places, they knew exactly what to expect, and when and

where to find the act and the event that reveal the secrets of creature motive and behavior.

The eighteen cinematographers, most of whom work exclusively with 16mm cameras and Kodachrome film, include Stewart Jewell, Robert Crandall, George and Nettie MacGinitie, Muel Denning, John Nash Ott, Jr., William A. Anderson, Dr. Tikles W. Roberts, Dr. William M. Harlow, Claude Jendrach and Arthur Conter, Jack Couffer, Fran Williams Hall, Rex Elliott, Dr. Roman Vishniac, Vincent J. Schriber, and Donald L. Sykes.

Stewart Jewell, unexcelled in time-lapse photography and in normal speed cinematography, supplies a natural history of the honey bee with detail of life within the hive and so insect-pollen pathfinding journeys like some great poet's golden myth. Jewell is a long time student of this fabulous insect whose secrets have been known from prehistoric time but whose chemical marvels and social mysteries have remained secret until now. Many of the bee's fantastic activities are disclosed for the first time in Jewell's remarkable

(Continued on Page 522)



NATURALIST-photographer and time-lapse expert Stewart Jewell in his home laboratory where he filmed many studies of flowers, plants and birds for "Secrets of Life" in interval exposures.



JEWELL sets exposure on his Cine-Spacial, preparatory to starting the camera for a series of interval exposures of the growth and opening of starbursts for "Secrets of Life."



WITH THE Cine-Spacial and interval timer mechanism closely engaged, naturalist-photographer Jewell watches the experiment make the first exposure on a rare species of plant for the Disney film.



HERE, USING his specially equipped Cine-Spacial camera again, Stewart Jewell films a humming bird at close range, dipping sector from a blossom for "Secrets of Life."



FIG. 1—Composite photo which shows how author's flash-frame cueing method works in actual practice. As the camera films the action (shown in inset photo) performed against a musical playback, the flash bulb (shown in front of camera) is ignited by movement of film on the recorder. This over-exposes one frame of film which becomes the start mark corresponding to start mark on the magnetic sound film.

A Method For Syncing The Pre-Scored Playback With The Picture Film

A simple cueing method for producers of 16mm films that insures accurate synchronization.

By ROY ZEPER

Staff Cinematographer, The Philco Corp.

IN MODERN DAY FILM PRODUCTION, when a scene incorporates music as an accompaniment to a singer or dancer, or as background the actions of a player whose exact synchronization is essential, the music is pre-scored and pre-recorded, then played back as the action

is filmed in sync with it.

Where the music—played back during filming—is recorded as the sound track for the picture film, there are problems of set noise, difference in sound levels, disc noise (where discs are used for the playback), and often

loss in sound quality. For this reason it is preferable to shoot the action against a playback of the music, and to use the original recording for the print sound track—dubbing it in later in place of the track recorded during shooting. This method, which has been employed by a number of industrial film producers, invariably introduces the problem of establishing start marks on both the sound and picture film as an aid to the film editor in establishing sync.

The Film Unit of Philco Corporation encountered this recently while shooting a number of playback shots for a 16mm film production. The action involved three ballet dancers performing to a musical number which had been furnished to us on a disc. It was essential that the dancers should prosecute and relevel an absolute sync with the music; for if a gesture preceded or followed the musical score out of harmony, it would be readily apparent to those familiar with the ballet art.

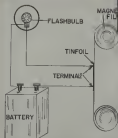


FIG. 2—Diagram of flash-frame system. A segment of Magnet attached to surface of the sound film bridges the two terminals to close circuit and ignite flash bulb.

Our problem was how to establish accurate start marks—i.e., some recognizable identification to precede the beginning of the playback music, and a corresponding, time-identification on the film to facilitate synchronizing both picture and sound at the editing table.

Our first step was to transfer the music on the disc to 16mm magnetic film, using a synchronous magnetic film recorder. In this way we provided the essential element of synchronization—a steady, uniform rate of travel of the sound medium to match the uniform speed of the film moving through the camera. Both the recorder and the camera were driven by sync motors.

With both the picture film and the sound film now set to move at uniform speeds, the next step was to provide the start or "sync" marks. We hit upon a simple method which utilizes a flash bulb for making the sync mark on the picture film, and employs a small piece of tinfil as the sync mark on the sound film. The latter triggers the firing of the flash bulb, which over-exposes a single frame of the negative for the picture sync mark. The firing of the flash bulb is shown in the composite photo (Fig. 1). As the camera starts filming the three ballenmas (inset photo), the magnetic recorder (off-stage) causes the flash bulb to ignite.

The sound film cue mark is a $\frac{1}{2}$ -inch piece of tinfil attached to the film with Scotch tape 24 frames in advance of the music, which is the standard sound track advance over picture. The tinfil segment on the sound film bridges the electrical terminals of the flash system as it passes over them and, being an electrical conductor, closes the circuit and causes the flash bulb to ignite—as shown in the diagram Fig. 2.

The arrangement is shown pictorially in Fig. 3. Here the segment of tin fil rests against the two spring steel contacts, which press lightly against the base side of the magnetic film. Figure 4 shows the work print of the picture film and sound track film locked in the synchronizer, with arrows pointing to the corresponding start marks. Matching the work print cue mark (flash-frame) with the sound track (tin fil) ensures that both will remain in sync throughout the editing procedure.

It should be emphasized that electronic flash cannot be used successfully in this flash-frame method of start-marking the picture film. This is because the electronic flash has a duration of but $1/1000$ th of a second against that of about $1/25$ th second for the flash bulb.

It is also recommended that a 22½- or 45-volt battery be used to deliver the strong electrical surge required in firing the flash bulb.

END



FIG. 1.—Arrows point to the two spring steel terminals mounted in film path of Housch-Bellman synchronous magnetic 16mm film recorder. Here the tinfil segment is shown bridging the two terminals which closes the electrical circuit and ignites the flash bulb.



FIG. 3.—Arrows point to the tin fil segment attached to the 16mm magnetic sound film, also the flash on the 35mm picture film. Both films are locked in sync in the synchronizer, ready for editing.

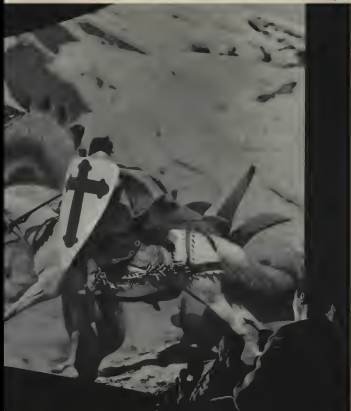


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Photographing The Television Image

Film records made of television programs are recorded by motion picture cameras having special shutters

EVERY FIELD of motion picture photography has its particular set of problems and requirements, and this is especially so with what is perhaps the newest field—that of kineoscope photography, also known as television recording. This has to do with recording on motion picture film the image on a television tube. Such films are required where a given program must be repeated later or re-broadcast at a later hour because of repeated time differences. Other uses for kineoscope films are: when a program is to be syndicated to other network stations, air-checks of live TV programs, legal records of programs, and the preservation of historical events, etc. Until the re-introduction of lenticular film recently, kineoscopes of color TV programs were not possible in color.

Television images in the U. S. are normally scanned at the rate of 30 frames per second (each complete frame cycle consisting of 2 interlaced TV fields). However, a method has been perfected whereby TV images can be smoothly recorded for standard 24 frames per second motion picture photography by exposing one frame of film for every 525 lines of television (the equivalent of 2 TV fields or one complete TV frame cycle) and moving a new frame of film into place during the time equivalent to 151½ TV lines, which is equivalent to one-half of one TV field.

Thus, for successful kineoscope cinematography, the recording motion picture camera (usually of special design) exposes one frame of film for exactly 1/30 of a second (the length of exposure of a TV frame) and moves another frame of film into place (without exposure, of course)

AURICON CINE-VOICE camera fitted with the patented Auricon kineoscope shutter and Mitchell 1350-foot film magazine for television film recording. This single-system camera will record TV programs—both the picture and sound—directly from a receiver screen at home TV receiver.



within the small interval of 1/120 of a second. This is most easily accomplished with an electronic shutter, which blanks or cuts off the TV image at the end of every 525 TV lines.

Most kineoscope recording cameras, however, utilize a mechanical shutter, similar to standard motion picture cameras. A shutter revolving at the 24 cycle rate (the frame speed of sound film), having a closed angle of 72° and an open angle of 288° will have a closed time of 1/120 of a second and an open time of the required 1/30 of a second. Such cameras (two of which are pictured here) are made by several manufacturers, including: Producers' Service (Acme), Eastman Kodak Co., Mitchell Camera Co., Berthel-Bach, RCA, etc. A separate motor is employed to drive the shutter independently in order to insure accurate timing.

Mitchell Camera Corporation makes a 35mm kine recording camera which employs an electronic shutter. The company has also been developing a 16mm kineograph camera that will have a mechanical shutter and will eliminate need for the separate shutter motor. Sixteen-mm kineoscope cameras are in greater favor than those using 35mm film, chiefly because of the economies involved.

In the process of converting 30 TV frames to 24 motion



EASTMAN KODAK Company produced one of the first kineoscope cameras. Here a special 1200-foot magazine for 16mm film is being mounted on it by the camera's designers, William Feldman and Joseph L. Bess.

picture frames, some frames of film photograph or second parts of some TV fields. The juncture on the film frame where these part-frames meet is sometimes called a "splice." Where camera timing is accurate these splices are invisible. However, where timing is inaccurate a phenomenon known as "banding" or "shutter bar" takes place. When the shutter is slow in closing, over-exposure results where the part-frames join, and the shutter bar takes the form of a white line. If the shutter closes too soon, under-exposure takes place and the line is black.

The application of a single coat of brushing lacquer on the edge of the shutter blades often can make the difference between the presence or absence of banding. More than one "splice" may be present (which will show on the screen as two shutter bars if there is banding) depending on the phasing between the camera shutter and the television image impulses.

The lenses used on cameras employed for kinescopy need not be color corrected, according to Jackson L. Rose, writing in the *American Cinematography Handbook*, nor is great depth of field necessary. "It is more important that the lenses be of high speed and capable of producing a very sharp image with high resolution of a flat surface," he says. "There should be no distortion due to curvature of the glass elements or falling off of light transmission toward the outside edges. They should be coated; 40mm and 50mm lenses in calibrated mounts are usually used with 16mm kinescope cameras."

The accuracy of visual focusing may be checked by examining under a microscope a piece of exposed and developed negative.

In order to record a half-hour television program without interruption, camera magazines have been designed which will accommodate a load of 1200 feet of 16mm film. These TV stations which make kinescope recordings on Xerox film use 4000-foot magazines, which afford continuous recording for a full hour.

Some kinescope cameras can be had that have sound recording equipment built-in, making it possible to record the video image and the sound on the same film. Some stations prefer to record the sound separately on a recorder synchronized with the camera. This latter method, known as double system sound recording, greatly facilitates editing and permits a better quality sound track to be produced.

While some kinescope recording is done by photographing the TV image from the face of a monitor tube or from a regular home television receiver, recording done by the TV stations utilizes

(Continued on Page 626)



COMPOSITE PHOTO shows the new Fastair high-speed 16mm motion picture camera developed by Wollensak Optical Co. for recording flight characteristics of guided missiles, and in background, the type of orbits in which it will be used as a data recording instrument.

Guided Missile Camera

Fastair is the first high-speed camera designed to record flight characteristics of guided missiles.

A NEWLY-DEVELOPED guided missile speeds skyward toward its objective. Will it be on target, or will it miss and return to earth with its secret locked inside? If there is failure who will tell? How will engineers know what was wrong, what part failed, why it missed?

These and other delicate engineering problems baffled the research and engineering staff at Lockheed. They knew that photography could, if given the opportunity, picture the weaknesses, help point up the answers. But where was there a high speed motion picture camera strong enough to withstand the high "G" loads, severe vibrations, and shock necessary to do the job?

There was none. So researchers from Lockheed's Missile Systems Division brought their problem to Wollensak Optical Company, manufacturers of the world's most versatile high speed cameras, the Fastair. Wollensak designers and engineers under the direction of Robert Herden, project engineer, went to work. From their broad knowledge of the field of high-speed photography, and with their understanding of the problem there evolved an entirely new high-speed motion picture missile camera so rigidly constructed that it can withstand 100 G (gravity load factor) during launching, acceleration and deceleration of guided missiles. It was built and put through the several tests.

(Continued on Page 626)



STRANDED SEA LION encountered by crewmen of U.S.S. *Exeter* on Navy's "Operation Deepfreeze" in Antarctica. Photo is a frame enlargement from 16mm color film shot by cameraman Bill Hartigan for NBC's TV newscast.



OPERATION DEEPFREEZE scientists start out on exploratory hike over barren wastes of Antarctica, pulling sled loaded with their supplies. Close weather favored Hartigan's color photography.



HARTIGAN'S 16mm *Exeter* camera caught the Navy scientists returning to their Antarctic base camp, following an exhausting, exploratory hike on the frozen wind-swept continent near the South Pole.



NBC's Bill Hartigan shown using unique body-pod which enables him to operate the Avicon Pro-600 as a head-held sound camera. Hartigan accompanied Navy's recent South Pole expedition, "Operation Deepfreeze," to Antarctica to rejoin the scientists whom they re-unite for Antarctica this fall.

Operation "Deepfreeze"

The worst climatic conditions ever endured by a cameraman were encountered by Bill Hartigan filming Navy's exploration of Antarctica for NBC.

By JOE HENRY

THE SOMETIMES rigorous location filming, familiar to many cinematographers, is livingroom comfort compared to the incredibly cold and difficult shooting conditions experienced by cameramen on Antarctica with "Operation Deepfreeze."

Fifty-two thousand feet of *Exeter* sound film is color were shot by NBC's William B. Hartigan, the only television news cameraman to accompany the Navy's South Pole expedition. "Operation Deepfreeze" is the Navy's name for the American participation in the Antarctic phase of the International Geophysical Year, 1957, is the largest inter-national scientific undertaking in the history of mankind, and is designed to help all nations gain more knowledge of the earth and its atmosphere by making meteorological and other measurements at various points on the surface of the globe.

(Continued on Page 610)

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SHOOTING A SCENE for a teaching film on reading. Stamped Cine Special camera is at rear. Note temporary makeshift treatment of walls at right—sound absorption mats placed against the solid walls—in order to record acceptable sound.



THREE CAMERAS setup used in shooting one of the 161 reading films—A Special for MCU's of people on Action for MCU's of teacher, and Cine Special in blue in foreground for making long shots. Setup was designed and built by students.

Film Production At The State University Of Iowa

By STANLEY E. NELSON and JOHN MERCER

FOREWORD: Serious film making by and within the nation's colleges and universities has, in terms of accomplishments, persons involved, and equipment and supplies utilized or consumed, become a major activity within the sphere of motion picture production.

Now, in the nation's leading colleges, serious workers in motion picture photography and production are obtaining through actual experience a working knowledge of the various film production arts and crafts they could not otherwise obtain. Out of this important "apprenticeship" training will come many of the industry's future cinematographers, artists and technicians.

Recently, these collegiate film units organized the University Film Producers Association (UFPA). It publishes quarterly a comprehensive Journal that chronicles the activities and accomplishments of its various member units.

The following article is condensed from a report by Stanley E. Nelson and John Mercer entitled "Film Production at the State University of Iowa," which appeared in Issue No. 2, Vol. 8 of the UFPA Journal, and appears here through permission of the authors. It is a factual account of the inception, growth and functioning of a typical college film production unit, and as such should be of interest to many of our readers.—EDITOR

THIS MOTION PICTURE PRODUCTION UNIT at the State University of Iowa is part of the Bureau of Audio-Visual Instruction, which is in turn a part of the Extension Division. Other components of the Bureau are the Photographer Service, Graphics Section, Tape Recording Laboratory, and Film Distribution and Campus Service.

Dr. Bruce E. Malott is Dean of the



ANAMORPHIC LENSES secured on a Cine Special are used in shooting wide-screen versions of football games at SU.

Extension Division, and Lee W. Cochran is Director of the Bureau of Audio-Visual Instruction. All the fiscal work of the Motion Picture Production Unit is handled through the accounting system of the Film Distribution Service, headed by John R. Hedgus, Associate Director of the Bureau.

The Unit started as a corner of one of the rooms used by the Film Distribution Service in East Hall. Later a larger room in East Hall was used, and after World War II the Unit occupied a temporary barracks-type building. Within the last three years another building was taken over, and some space in East Hall was acquired. At the present time, the laboratory is in one of the barracks (air conditioned), the second barracks is used for an animation studio, small shooting stage, and equipment storage, and the space in East Hall is given over to the office, camera storage, editing and sound recording. The sound and editing rooms are air conditioned. The Unit does not have an adequate sound shooting stage at the present time.

Because of the lack of studio space, most of our shooting is done on location. While location work would be normal for many of our productions, it has been necessary at times to give classrooms temporary acoustical treatment in order to record acceptable in-duracoust sound.

Facilities for recording narration, music, and effects are very good. Three rooms are used for this purpose. In one room are located the synchronous projector and film phonographs. Next door is the recording room with mixing panel, magnetic and optical recorders, and disk playback. The room in which the narrative records is treated with acoustic tile and also serves as the Unit projection room. All partitions divid-

ing the rooms have double-pane glass windows.

Editing rooms are adjacent to the narration recording room. While this enabled us to air condition all the rooms easily, it means that editing activities must be slowed during a recording session.

Films are produced entirely upon the request of a University department. In such cases, costs charged to the department include such out-of-pocket expenses as film stocks, lighting, transportation, sets, properties, and art. Some salaries are included in the Extension Division budget, while other operating costs such as hourly wages are paid from income.

Ordinarily at initial production conferences the purpose of a proposed film is defined, and we then decide upon the type of production which would best fit this purpose. We prepare a cost estimate based on film type and length. Sometimes funds are transferred initially, but in the case of small projects the department may simply be billed on completion of the film.

A number of films are produced on a revolving fund basis. Certain films in the field of time and motion study, secondary school reading, teacher training, and others of a general nature, are sold to other school or to industry. Income from the sale of such films helps amortize the original production cost and profit is often used to produce other subjects.

Scripts are often based closely on an outline furnished by the department. Our time and motion study films were of this type. In some cases, however, a department sponsors a film which requires some creative scriptwriting. A recruitment film, *It's Your Decision*,



THE UNIVERSITY'S film production unit has two Bell & Howell Model-2 continuous contact film cameras in its laboratory, one equipped with a PAB Reader.

made for the University Registrar, was of this type.

A large amount of release footage is made from originals which were not shot in scripts. Athletic events, especially football and basketball games, are shot on film records and later given sound tracks for television release and subsequent circulation. We are now making some sound film records of

(Continued on Page 626)



THE NEGATIVE processing machine is a modified EDA Model DM-7. At the present time it is used only for processing panchromatic materials, and Kinecope recording negatives.



A CORNER in the University's film editing department. Other equipment includes standard Moviolas and sound print readers. Optical sound work prints are used at present.



FIG. 1—Right Astoria 35mm motion picture cameras were mounted in forward along the course and recorded the flight of the Chance Vought Crusader as it flew.



FIG. 2—Mounted on trailers each with its own power plant to motivate it in tracking its object, were two Bowen cameras equipped with 16" tele-lenses aimed straight up.

Photography Aids In Establishing Speed Mark For New Fighter Plane

By JOHN FORBES

A new system of timing, in which motion picture cameras play a vital role, was used for the first time in setting the new national speed record in the Navy-Chance Vought fighter plane. Photography by twelve cameras enabled the F8U-1 Crusader to set a new national speed record over the 15-kilometer high-altitude course at China Lake, California.

The official speed record announced recently by the National Aeronautical Association was determined from photographs made by two Bowen cameras backstopped by right Astoria 35mm theodolites which also recorded the two runs. Radar tracking was used only for ground track determination as an aid to the pilot so he would not be out of less range of the vertically-pointed Bowens. One radar locked on the plane's radio beacon signal and the other locked on the plane's skin.

At the exact surveyed start and finish lines of the course were located two Bowen cameras with 16-inch lenses and



FIG. 3—Small arrow, center, points to image of the Chance Vought Crusader diving through space on record-breaking flight. In upper left-hand corner (arrow-1) was recorded altitude and elevation figures. Film was exposed in one of the Astoria cameras.

having high-speed shutters somewhat like a rotating, slotted beer can. These cameras record the flight at 30 frames per second at an exposure of 1/25,000th of a second.

As the Crusader cleared the starting line these cameras were started automatically. Each picture was recorded as a narrow $\frac{1}{8}$ " strip across the seven-inch film as it moved continuously behind the revolving shutter. Along the edge of the film are 1000 cycle timing marks from which the speed record was computed.

(Continued on Page 617)



FIG. 4—Section of film recorded by Bowen camera, showing photo (arrow, center) and vapor trail at edge of frame. Not shown are the thousand-cycle timing marks registered along right-hand edge of film from which the speed record was computed.



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IDEA for a documentary of San Francisco's north highlights led Tullio Pallagrin to produce a very successful Ideen color film in the Cinemascope format. New cinematographer has mounted on his Rollei camera.



IDEA for a film based on the fairy tale of the "Ugly Duckling" resulted in Danes Plunket, of Los Angeles, producing an extraordinary feature film in Ektachrome color on miniature stages erected in a garage.

The Idea Is The Foundation Of The Film

The most successful amateur films begin with a solid idea that may spring from a wide range of sources. It's how skillfully you develop the idea before starting to shoot that counts.

BY CHARLES LORING

PERHAPS THE FOREMOST feature that all motion pictures have in common is that each one is based on an idea. Whether it be a Hollywood feature, a documentary or industrial film, or a home movie record of the family—the most successful of these has as its basis a definite cinematic idea.

It goes without saying that any attempt at film making without this basic idea results in nothing but a bodge-podge of unrelated shots that fit clumsily together at best, have no coherent meaning, and succeed only in boring an audience.

"The idea is the thing—" (to paraphrase Shakespeare). When it is lacking in a picture, all the good acting, direction and photography will not justify the time the audience must waste in viewing it.

The idea for a picture should be considered as a sort of bedrock foundation upon which is built the product of

the various arts and crafts that go into motion picture production. It should be the first thing the film maker, be he amateur or professional—considers before he begins the production of a film.

The Hollywood producer of theatrical films is necessarily restricted in his choice of ideas for motion pictures. He makes films for the great mass of the American and foreign public—entertainment films of a fictional nature. He is limited, therefore, to ideas that contain elements of (a) general audience appeal, (b) entertainment value, and, not the least important, (c) its box office drawing potential. He cannot hope to please all the people all the time, but he nevertheless strives to please the largest segment of his potential audience most of the time. Since theatregoers, by and large, are attracted to the movies primarily by star names, the Hollywood producer must make sure that any story idea he is considering

for production is ideally suited to the talents of the particular star players he has available. In addition, the film idea must follow any particular trend in story line prevalent at the time if it is to be a moneymaker.

For these reasons, the theatrical film producer today selects stories on the basis of timeliness, its treatment of a popular theme, or based on some recent happening or incident. More recently, the major studios have turned to the book publishers and to the New York stage for story ideas to present on film.

The amateur or other non-professional movie maker, on the other hand, is bound by no such limitations. Not having to make films to please the mass public, he can devote his cinematic talents to making motion pictures for smaller, more select audiences. Depending upon the specific audience for which he plans his film, the sky is the limit insofar as the basic idea is concerned.



IDEA for a photoplaylet based on a day in the life of a tramp turned out to be a prize-winning film for Harry Belafonte, shown here putting final editing touches on the 16mm color production.

Naturally, the non-professional must first analyze his prospective audience; he would hardly make the same type of film for, say, the Parent-Teachers' Association that he would for a society of chemists or a college football team. The basic idea varies with the character and visual requirements of the potential audience.

But aside from this consideration, he is free to let his imagination roam in the choice of a picture idea and its execution. Those who would produce serious films will find about them a whole world of ready-made cinematic ideas: the life of a farm hand; the manufacture of a product; the way of life of Mexicans, Indians or other foreign peoples—and simplest of all—how you and your neighbors live.

The basic ideas need not necessarily be as tangible as these suggestions; rather, it may be an emotion or character trait. Fear, anger, jealousy, courage, faith—each of these holds interesting possibilities in supplying the idea for a worthwhile film. Similarly, a single physical phase of nature, such as rain, fire, sunshine, etc., can provide an interesting continuity idea.

Interesting locales, such as Yellowstone Park, Yosemite, the Grand Canyon, or Hawaii offer a wealth of ideas for films; but a solid and appropriate story line should be woven into such pictures so that the locale becomes a motivating factor of the action rather than merely a static background.

Characters and processes personalities can provide engaging ideas upon

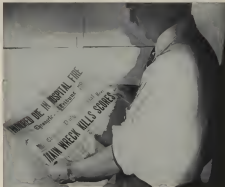
which to base a film story. The neighborhood druggist, a circus clown or a visiting celebrity suggest but a few of the personalities about whom an interesting film could be developed.

All too often the non-professional film maker feels that he doesn't dare turn a

camera unless he has an earth-shaking idea in mind; that nothing short of a theme like "Gone With The Wind" is worthy of his cinematic efforts. He stands a better chance of success, however, if he selects an idea that is not too ambiguous—one that is entirely within his capabilities to produce as a well-integrated motion picture. A small idea can become the basis for a big picture. I do not mean an unimportant idea, but rather one that may be compact in scope. "A Day in the Life of A Dog," to name an elementary example, is an idea that, with skill and imagination, could be developed into a highly entertaining motion picture. On the other hand, an amateur attempt to portray the civil war in 8mm or 16mm would almost certainly prove clumsy and inept. It is obvious, therefore, that one should draw upon sources around him for film ideas before venturing into fields that are unfamiliar.

When an idea is being considered as the basis for a motion picture film, there are certain requirements that it

(Continued on Page 511)



IDEAS for films are everywhere, but most productive of successful amateur films, perhaps, are those which spring from the pages of your daily newspaper. Not all the best film-making ideas are in the bold headlines but are often found in a brief item tucked away in the corner of an inside news page.



MAIN TITLE in which test, and static and moving background elements were photographed in three separate steps by Leo Caluso



CAMERA SETUP used in shooting title card and static background illustration, using sunlight for illumination



RECORD PLAYER supplied motion to circular background illustration, giving effect of satellites moving through space



CAMERA SETUP used for shooting third and final step in the 3-exposure color disc. Disc rotated at 33 1/3 rpm, camera at 48 fps

The Title Sets The Stage

By ARTHUR EDWIN

NOTHING SETS THE STAGE for the successful screening of an *8mm* or *16mm* film like a well-designed and photographed main title. When the main title looks professional, it not only commands respect for the film but suggests that a better-than-average picture is about to unfold on the screen.

Leo Caluso, one of Los Angeles'

leading *16mm* amateurs, has long been noted for the superior quality of his films. His main and credit titles invariably show the same careful attention to detail that goes into his direction, selection of actors, or the dressing of sets used in his dramatic photography sets.

Always one to come up with new

and novel ideas, the technique he used in executing the main title for one of his better-known productions is interesting. The title for "The World Around Us" is reproduced above. The accompanying illustrations show the various steps followed in producing the multiple exposure title.

On the screen, the background appears as the moon with a space ship moving toward it. Pictorial movement is supplied by various colored moons and satellites moving in the background. All this was accomplished in three separate exposure steps.

First to be photographed was the title card test—white letters on a black background. (Continued on Page 616)

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OPERATION "DEEPFREEZE"

(Continued from Page 686)

Hartigan has described "Operation Deepfreeze" as the most challenging and difficult film assignment of his career as a cameraman. On Antarctica he was found that "being a news correspondent and cameraman doesn't cut any ice down here. You become a worker, pull sleds, help cook, and otherwise carry your share of the work load." And of course, Hartigan's principal responsibility was to bring back professional sound-films of the expedition.

Using an Auricon Pro-600 Hartigan shot footage covering every phase of the adventure from the "jumping off" point in New Zealand, through the westbreak zig work of the U.S.S. Glacier, a rescue of expedition members whose plane crashed, and a dramatic flight over the geographical South Pole. On the trip over the Pole, Hartigan encountered some of the worst climatic conditions ever endured by a cameraman. This frozen-white continent at the bottom of the world, with its blinding gales and sub-zero weather, presented difficult and mysterious problems to cameramen and camera alike. Here, cameras require special winterization and supplementary internal heat to prevent the bitter cold from transforming film into a substance as brittle as thin glass. It was necessary to devise a positive method of sealing and changing camera controls without using the bare hands, which can result in loss of skin and flesh in 70° below zero temperatures. Camera and amplifier batteries required special protection to enable them to deliver current at a normal rate.

The winterization of Hartigan's Auricon Pro-600 sound camera and the many other items of photographic equipment required an intensive and exhaustive study of the effects of cold on representative cameras, camera lubricants, lenses and film.

The entire field of the new silicones and low temperature lubricants was investigated, and exhaustive tests were conducted to determine which would permit mechanical movement at 75° below zero and still provide adequate lubrication. Every effort was made to accurately duplicate conditions under which camera equipment would be operating in the polar regions. Many new winterization devices were developed including tiny, finger-size electrical heaters for the camera shutter designed to prevent film brittleness under extreme cold conditions.

Hartigan and other cameramen on "Operation Deepfreeze" heeded the warnings of polar photographers who had preceded them and who found that operation of any camera with the bare

hands was dangerous and sometimes extremely painful. A unique method of changing camera settings was devised. Radial spokes attached to the lens mount enabled cameramen to set and operate their equipment without removing their gloves.

To provide greater safety for ship-board filming, standard gimbal-mount tripods were each equipped with an 85 pound swinging weight suspended between the tripod legs, insuring that the camera platform would remain level during the roll and pitch of a ship in heavy seas.

Through all of the hazards and problems of "Operation Deepfreeze" filming, Hartigan's Auricon sound films for NBC were the first pictures of any kind to be flown to the waiting press and television news broadcasters. In addition to the regular film coverage on TV, some of Hartigan's Auricon film frames were enlarged and used as stills for the newspapers and for illustrating this article.

The experiences of Hartigan on this Antarctic expedition will be of tremendous value to cinematographers all over the world who may brave the sub-zero cold and hazardous conditions of polar filming in the future. In addition, the 52,000 feet of color sound-film which he shot on the frozen continent are a significant contribution to the public's understanding of the "International Geophysical Year" program.

THE TITLE SETS THE STAGE

(Continued from Page 614)

background. This was tackled to the easel shown in the second photo, top row, and photographed in sunlight. Calico flats sunlight far superior to artificial light in shooting titles. "Gives a better overall rendition," he says. Exposure on outdoor Kodachrome at 24 fps was 1/6-3.

The film was wound back in the camera and made ready to record the background of moon and space ship. The background was in blue to represent the sky. The moon was orange and the space ship grey. The camera was lined up so that the moon would appear in the upper left-hand corner of the frame. Exposure, at 24 fps, was 1/8 in bright sunlight. The film was then wound back for a second time and made ready to record the series of small rotating discs or "satellites."

Prior to this, Calico cemented a black cardboard disc over an old photograph record and painted a series of starlike discs of various sizes and colors along its perimeter. This was mounted on a motor-driven record player camouflaged with soft black cloth, as shown in photo No. 4. The camera was focused on

only a small area of the rotating disc so that it caught the colored satellites traveling diagonally across the frame. The record player was operated at 33½ rpm and the film exposed at 48 fps in order to slow down the movement of the satellites.

Almost any 35mm or 16mm cineblender can produce professional-like titles, following this same method. The most important factor, of course, is using a camera that affords backwinding of the film and an accurate means of counting the footage or frames wound back. Calosa used the Eastman Cine Special. Art work was produced by a professional artist following Calosa's specifications.

PHOTOGRAPHY AIDS FIGHTER PLANE SPEED MARK

(Continued from Page 616)

Officials of the National Bureau of Standards, after analyzing these marks on the plane scores across the 100-foot roll of negative, determined the exact time it crossed the starting line. By comparing the starting time with the time recorded by the Bowen camera at the finish, the speed was computed exactly.

A supplementary system of distance and time measurements by use of Askania phototeodolite 35mm motion picture cameras using 24-inch telephoto lenses also was used with a view to establishing it as an acceptable method for future record attempts.

Eight of these swivel-mounted German cameras (pictured in Fig. 1) were stationed, four on a side, a short distance east and west of the north-south course. Operators using telescopic sights picked up the aircraft as soon as it approached the course. All eight of the cameras simultaneously started shooting color pictures of the plane at four frames a second. In the corner of each 35mm frame was a picture of the azimuth and elevation disk of the theodolite. ("1" in Fig. 3).

The camera operators kept the plane in the lens' cross hairs throughout the run. By trigonometric analysis using film from several cameras, the exact position of the plane and its speed was determined. Results of the theodolite coverage of the speed run will be submitted in a separate report and were not official in determining the 1000-mile record, which was based on film records of the Bowen cameras.

Besides the two Bowen installations and the eight Askania movie cameras, a number of other cameras helped cover the Crusader's successful speed run. The plane itself carried a 16mm movie camera inside its skin and recorded continuous pictures of a panel of instruments showing airspeed, altitude, outside air

A man

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temperature, a clock, an official N.A.A. timing watch or chronograph and two Navy barographs to permanently record altitude.

A crew of Navy still and movie cameramen from ComAirPac, San Diego, took pictures from the air and at the Mojave FSL hangar to record the activities, as did civilian cameramen from NOTES Chino Lake and Chance Vought.

To stay in the low-angle range of the important Bowen cameras at both ends of the flight course, Pilot Windsor had to fly within one-and-a-half miles of the imaginary flight line at 40,000 feet. In warning flights over the course before the "Big Day," Windsor frequently was slightly off line on one side or the other. Navy radar operators on the ground coached him by radio to change his headings to get back on course.

As Windsor brought the grey-and-white Crusader to a stop in front of the hangar at Mojave and opened his canopy at the end of the flight, he held up his two thumbs in a signal of victory to his ground crew. Before the crowd of well-wishers could warm up to greet him, officials of the National Aeronautics Association went to the plane and removed the two barographs and the film from the motion picture camera inside the fuselage, which had photographed duplicate sets of flight instruments located in a compartment behind the pilot. The film was developed in the hangar darkness. The barographs which recorded the plane's flight altitude were sealed and sent to the National Bureau of Standards for analysis.

By noon on the day of the flight it was known that the plane officially had met the requirements of the speed run as its altitude and flight path over the course N.A.A. observers went back to laydown with the films, flight data and signed papers to make the attempt official.

IDEA IS FOUNDATION

(Continued from Page 673)

should meet before being definitely selected:

1. *The idea should be worthwhile.* Making any motion picture is a large operation, no matter on what scale it is undertaken. It involves a sizeable outlay of time, effort and money—expenditure of which is unjustified if the picture idea has not the elements of success. Its worth, therefore, should be carefully analyzed in advance.

2. *The idea should be entertaining or informative, or both.* The filmmaker should consider his prospective audience, then ask himself, "Will a film based on this idea entertain or inform that audience?"

3. *The idea should be distinct.* The

motion picture, as the very term implies, is a medium that depends upon action. Despite titles that are often used by some film-makers to force movement into a static idea, the fact remains that a satisfactory motion picture cannot be made unless the idea itself possesses elements of action.

4. *The idea must be pictorial.* That is to say, it should be capable of being staged in interesting locales and settings. The word "interesting" here does not imply lavish sets and beautiful landscapes. Lanes of wash hung in a tree-trunk court may be pictorially interesting. Smoke from the chimneys of a hobo village may be interesting. The distressed faces of sweating laborers may contain elements of great pictorial interest. If these elements are present in the idea, the film has a head start toward being a success.

5. *The idea must be cinematic.* Many fine novels and plays have been written that would not make good motion pictures because they are not translatable into the language of cameras and film. Similarly, the non-professional film maker will often hit upon ideas that sound fine until he stops to analyze them in cinematic terms. The motion picture, despite its almost boundless scope, does have certain limitations, and there are some abstract ideas that are difficult to portray on the screen. The film maker should shy away from such ideas and confine his efforts to themes that, by their very nature, can best be portrayed through the medium of the screen.

6. *The idea should be practical.* Here again, the average nonprofessional film-maker tends to approach ideas that are too ambitious for the production set-up with which he has to work. If, for example, he lives in an island district, he wants to shoot a sea story. If he is working on a close budget he usually thinks it would be nice to have a "cast of thousands." Actually, it is quite possible to stay within one's limitations of equipment, locale and budget and still turn out a fine motion picture. Motion picture making is an exacting business at best; the producer, therefore, should not make it more difficult by straining limited resources to film an idea that is obviously out of reach of his production set-up.

Developing the story idea to its fullest is of paramount importance. Before he starts to shoot, even before he writes his script, the film-maker should have the idea fully developed and analyzed in his own mind. He should give the idea a good deal of thought, allowing his imagination to play with the various facets of the subject, letting the idea build up in his mind until he can see a clear mental picture of how it will appear on the screen. He should take notes, jettling

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down the details as they occur to him, later cataloging and arranging these notes to help him in production planning.

As we have said earlier, the idea is the foundation of the film, and the intelligent producer builds his whole production around it. Each technical process, every line of dramatic approach is keyed to that basic idea, and is discarded if it does not materially add to its interpretation. Beware of efforts that lead the continuity on tangents away from the main theme. Unity is the key-note of smooth continuity on the screen.

As the producer works mentally with the idea, he will find that it takes on shape and depth and character until finally it evolves itself into a theme. A theme is an idea that has broadened in scope to a point where it becomes the underlying motivation of every step and process in the making of the film.

For instance, let us say that a producer wishes to make a film based on the idea of "dust." The idea in itself is rather abstract and might be interpreted in a number of different ways. But as he thinks deeper into the subject, applying his imagination to its development, he becomes more impressed with the role that dust plays in the lives of mid-western farmers—those men of the soil living in the so-called "Dust-bowl" area where fierce dust storms destroy crops and life and fight the farmer for his very existence. After it has been broadened out in this manner the word "dust" no longer is an abstract idea; instead, it has become a vital theme for a motion picture: "Dust, Enemy of the Farmer."

Actually, the theme as it develops from the idea becomes the factor that will determine what treatment the whole production will receive. It will dictate the succeeding steps of writing, directing, photography and editing. Its message will be indicated in every bit of action and narration that goes into the film. If the film-maker keeps his central idea constantly in mind throughout the various steps of production, the resultant production will have a directness and unity of approach that will make for effective cinema.

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By George Lowell



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PERHAPS NEVER before in the history of newsreels and television has the lighting of a public event provoked so much attention as the unorthodox method of lighting introduced by Bob Duggan of The Studio Lighting Company at the 1952 Democratic National Convention in Chicago. Before the advent of Tri-X film, lighting the convention was always a "Gone With the Wind" production due to the high footcandle requirements necessary for the slower film.

The floor lighting in the International Amphitheatre this year was done without the use of any lighting units normally employed in motion picture and television studios. It was an innovation and it worked.

At the time of the two Conventions four years ago, which was also a Studio Lighting Company job, Tri-X was not available and 225 footcandles was the order of the day. Of the 1956 Convention, cameramen agreed 125 footcandles of light would be ample. To achieve smoothness together with all-over coverage, using previous lighting methods, a great many studio-type, high wattage, motion picture lights would have been required—even the special lights that were built for the 1952 Conventions—

and would have raised the footcandles and the heat unacceptably.

Duggan said, "With the low light-level requirements of Plus X film, why make it a big project? I just nailed a bunch of 500-watt R-40 and 1,000-watt R-60 reflector floods to some two-by-four's and souped up the voltage on the transformers feeding those 1,000-hour globes and we had 130 footcandles of light. The effect was as though there was a giant 150-ft long fluorescent tube on each side of the hall. The light was totally shadowless with a complete absence of glare."

Rigging the featherweight units was a breeze, according to Duggan. The only tough part was feeding the north bank of lights from the transformers at the south end of the building, which required several thousand feet of 4/0 cable laced through the girders on the roof. This whole project, he said, was made possible by the cooperation of Bob Benson, electrical head of the Amphitheatre, who arranged his circuits to permit a voltage rise on a particular bank of transformers that would not affect the rest of the Convention hall.

The Studio Lighting Company has lighted a total of eight Democratic or

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Republican National Conventions, the first being in 1932, when for the first time, 10,000-watt incandescent globes were used on a political convention.

Ninety-eight R-60, 1,000-watt and one-hundred seventy R-40, 500-watt globes were used this year—a total of only 1,525 amperes on the floor. Additional lights on the press section, adjacent to the podium consisted of four 10's and two 5's. The floor light used 150 incandescents dead center and increased to about 160 on the side sides. Front light on the speaker, 250 foot-candles; back light, 320.

The simple and direct approach of this unique type of lighting brought nods of approval from both the newsreel and television cameramen who recorded this event, and Duggan has been told to anticipate lighting the 1960 convention for color—both film and TV.

QUESTIONS & ANSWERS

(Continued from Page 584)

duction that so impressed him, it is impossible to evaluate it or make comparisons. Japanese cameramen have tarried out some fine color pictures, just as have cameramen in other countries. But it is hardly likely that any of them have any secret gimmick by which they produce the extraordinary results the reader has described.—*Arthur Miller, A.S.C.*

Q What is the best method of achieving a night effect with regular Kodachrome when shooting in daylight? Please name the proper filter to be used, if any, and the exposure you would recommend.—*R.L.B., Princeton, N.J.*

Use Type A Kodachrome film with an on the Wratten No. 85 daylight compensating filter and decrease exposure one-half stop. If this decrease in exposure proves inadequate for the effect desired, the scene may be made darker by the film laboratory making you duplicate prints.—*Walter Szelege, A.S.C.*

Q We are in the process of producing an educational film in color, which calls for a storm scene with lightning flashes. This will be filmed with a Cine-Special camera using Commercial Kodachrome. Any information you may be able to give on procedure that should be followed to produce the storm scene will be appreciated.—*C. J. T., Lansing, Mich.*

If you shoot with 3200° Kelvin illumination, you can obtain a satisfactory lightning effect by using a 5K globe in a lamp with the front glass removed, flashing it on and off by means of a dimmer switch. If you use an arc light for illumination, a good flash effect can be obtained by jumping the carbon gap back and forth. *Walter Szelege, A.S.C.*

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TIME LAPSE AND TELEPHOTO

(Continued from Page 599)

color films. Armored with special ant and head mask for close work in wild bee trees, Jewell nevertheless was repeatedly stung through arms and occasional exposure.

Too many injections of bee venom, says Jewell, can be serious and even kill a person if closely spaced. His many months of patient avian of wild hives, he says, called for more nerve than some of his previous assignments with dangerous animals.

Robert Crandall, peer of nature photographers, is a recognized authority on ants and has done much original search and research on this great insect family, reflected in one of the most important segments of "Secrets of Life." In addition to extensive field study Crandall observes his subjects under an elaborate photo-microscopy set-up in his home studio and garden. His discovery, in a 16-foot deep excavation, of the wise colored honeycrank ants and their strange matter replicates to a distinguished feat of original photographic research. The replicates, not heretofore associated with this species, stuff themselves until they are enormously swollen honey containers and thus become lifetime servants to their fellow workers. Warfare without quarter, sharp division of labor, protection of young, growing and harvesting of vegetation, separation of reproductive functions, mass maneuvers—these and other fascinating aspects of ant society take on intelligible meaning under Crandall's probing movie lenses. He also shared top camera credits in "The Living Desert."

George and Neene MacGillivray (husband and wife) are noted marine biologists. He is a former Stanford University professor of this science and did research for the Navy in Alaska. At present he is with the California Institute of Technology. For "Secrets of Life," the MacGillivrays photographed the camouflaged decorator crab, the flower-like shellfish called Mithie, the walking kelp fish, jellyfish, barnacles and other marine life rarely seen even by exploring naturalists.

Muriel Downing, who has contributed many interesting features of the True-Life Adventure series and who is connected with the Milwaukee museum, this time comes up with an amusing eavesdrop on the life of the sickleback fish, the hunting prowess of the draperfly nymph and other tiny marine "monsters," beautiful and deadly.

John Nash Ott, Jr. In searching out nature's provocative mysteries for Walt Disney's amazing new True-Life Adventure, none of the 18 naturalist photog-

rappers who share the camera credits had a greater part than John Nash Ott, Jr., dean of time-lapse cinematographers and one of America's leading botanists.

In his Wisconsin studio and gardens Ott has spent years acquiring his knowledge of plants and flowers and the special techniques he has perfected to peer into the cell functions of growth and reproduction and the mysterious chemistry of color, perfume and harbored intelligence of seeds which, by ingenious device, have kept the earth green and habitable to man for millions of years. He has brought time-lapse photography to its highest perfection as an instrument for the study of plant life.

Most of his implements are of his own invention, housed in a laboratory where a complex of cameras, lights and image devices are arranged among a variety of growing things to have their portraits made and their secrets unveiled. Others are in open gardens and orchard.

His most fascinating contribution to Disney's new chapter on nature's visible wonders is the microscopically observed pollinating process of field corn. In a remarkable camera exploit, every phase of the beautiful primitive process is followed from the wind-shaken anthers down the silken canal to the ripening kernels and an abundant field crop.

Other scenes of botanical beauty show the actual ripening of strawberries, cherries, tomatoes, red peppers and pumpkins in the gorgeous Technicolor production in the same time-lapse method.

The marvels of this kind of period-timed cinematography also pose its special problems. Each subject, Ott explains, must be set up in accurate focus, with just a slight margin for unpredictable twist to sunlight and by moisture. The flower or fruit will be photographed on one frame of camera film once an hour, all around the clock, until the desired development or maturity has been recorded. In between times, the subject must be given sunlight and carefully regulated temperature. The lighting is so synchronized with the camera shutter that it flashes on only for the fraction of second the lens is open. By this means, all scientifically calculated, a ripening fruit will seem to have grown smoothly to full size and color in a few magic seconds, while it may have taken as many days or weeks actual growth in the garden.

For "Secrets of Life," Ott's mystery-probing, interval-timed cameras were kept busy night and day for months, working through seasons from bud to seed.

When orchard fruits are time-lapsed, the branch with bud and flower must

be housed in a specially designed box attached to the tree under conditions even more complicated. Every frame of film exposed there must be flushed within automatically regulated containers governing sunlight, wind, temperature and the artificial light.

Thus Ott has clarified many mysterious plant processes for scientific research and probed close to the ultimate secret of cell life. He has devoted his expert knowledge and technical skills not only to entertainment and educational films but also to the medical profession, dealing always with some of nature's most beautiful product and astounding intelligence.

William A. Anderson's main effort is on a colossal scale—the grotesque performance of the angler fish who lures other fishy adventurers within reach of his great snapping jaws by dangling a worm-like appendage in front of his mouth. Anderson also shows barrel traps designed to capture insects, in a turning of the tables on the animal world.

Dr. Tilden W. Roberts, resourceful wildlife photographer as well as noted natural scientist, served as biological consultant for "Secrets of Life." He has been connected in scientific departments with the University of Illinois (Ph.D.), U. of Tennessee, U. of South-

ern California, the Moody Institute of Science and was also biological consultant on Disney's "Nature's Half Acre." For "Secrets of Life" he captured on film the little anchor fish who shoots his insect prey down from overhanging weeds with a well directed drop of water. Roberts also filmed the diving spider and her underwater nest of air bubbles.

Dr. William M. Harten, official of the New York State Division of Forestry and a specialist in stop-action study of wilderness growth, discloses the strange devices of seeds and cone to replace their kind with botanical "intelligence."

Claude Fendrach and Arthur Carter provided the majestic background scenes of volcanic lava flow squirming its red blood into the blasting sea, photographed during a recent eruption in Hawaii.

Jack Coaffer stalked the Fiddler Crab and recorded his enormous and humorous antics in luring the hesitant female to come down and see him some time. Coaffer also got material in the Galapagos Island for a future Disney True-Life.

From William Hall depicts odd relationships between plants and insects in a world where a blade of grass is tall as a sugar pine in the magnosphere.

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equivalent to that found just below the shoulder of the H&D curve when the film is developed to a predetermined gamma. The beam current required to obtain this brightness is read on a meter and becomes the setting for correct exposure for that particular kinescope tube, emulsion, and laboratory-technique combination.

After the above procedure has been completed, preparation for an actual recording is done in the following manner: The "black level" is adjusted by eye until the trace line just disappears. With a video signal equivalent to maximum brightness in the picture being fed into the system, the video control knob is turned up to obtain an all white raster. The beam current is then increased until the brightness level—as previously determined—has been reached. The level for correct exposure having now been arrived at, the test signal is removed, and the camera is now ready to receive the picture image.

Numerous tests have indicated that the same processing techniques which have become standard for theatrical motion picture films also produce optimum results for television recordings. Most film laboratories today are so thoroughly versed in the requirements of television films that this phase of producing a kinescope recording can be left entirely in their hands.

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(Continued from Page 605)

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The Fastair uses a rotating prism. A single, battery-operated motor drives the few moving parts. Camera speeds from 12 to 600 pictures per second are dependent on motor and voltage applied. The Fastair is small and compact enough (13 15/16" long, 4 17/32" high, and 3 35/64" wide) to meet limited space within a missile; rugged enough to withstand severe vibrations, impact, shock and extremely high "G" loads and yet weighs only 8 pounds. The camera is provided with 50', 100', or 200' magazines using 16mm high-speed film.

FILM PRODUCTION AT UNIVERSITY OF IOWA

(Continued from Page 609)

regular University dramatic productions for use in studies of play direction. In addition, we often shoot a film to certain specifications without a formal script. One example of this type was a hidden-camera film involving facial expression and emotion.

We have a Maury camera with Kodak lenses and the new Maury blimp. So far we have used only the 100-foot magazines. The camera is used on an Avicam tripod. We use the Maury as a studio camera and as a title camera because of its accuracy and the ease it affords of making takes and dummies. We also use the Maury for covering basketball games because of the need for a motor-driven camera for long takes.

We have four Cine Kodak Specials (plus some out on loan), five 200-foot film chambers, and seven 100-foot film chambers. We use the Cine Kodak Specials for football because they can be wound after each play and are easy to carry to out-of-town games. Also,



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A few years ago we designed and had built several special sports finders for use with the Cine Kodak Specials at football games. The finder is essentially an open frame and pupil finder. The frame slides back and forth on two rods mounted on a bracket which fits under the camera. The rods are marked for frame positions for lens focal lengths of from one to six inches.

We also have a number of cameras of the Bell & Howell 70-M series. These are used for a wide variety of purposes, such as field work at sports events, television news coverage, and as loan cameras for staff members. We also have a Bell & Howell high speed (128 fps) camera which is used mainly in shooting movies for athletic research. One Cine Kodak Special is set up permanently as an animation camera. The single frame motor and clutch were made by National Cine Equipment, Inc. We had the animation stand built on campus. We use a standard peg board which is duplicated in the Graphics Section, our source of titles and animation graphics. We also do some animation work from drawings prepared by College of Medicine artists.

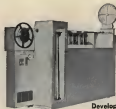
We have a large selection of lenses, mostly Bell & Howell and Kodak, along with our two new anamorphic adapters.

We use Professional Jr tripods for the most part, but in the stadium we have permanent mounts installed using Graflex pan-tilt heads.

General custodianship of all cameras on the campus lies with the Bureau of Audio-Visual Instruction, although most cameras are permanently assigned to various departments. Occasionally the Unit borrows a camera for a special purpose. In shooting the recent production at the University elementary school we used an Aumeco-Pro which is regularly assigned to the Television Center.

We are now recording all original sound magnetically. Most of our sound is recorded on our Magnascope 500, but we plan to use an Ampex for narration recording. Quarter-inch tape offers economies in cost and storage, and in addition it can be edited easily so that narration dubs can be corrected quickly.

Intermediate optical sound tracks are produced on a Manner optical recorder which we no longer use for location work. At the present time we must rate from optical playback tracks, dubs, or tape, and we have two Manner film photophones for this purpose. We have rigged a loose tree for one film photophone for playing back crowd scenes. We hope to obtain magnetic dubbing



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equipment in the near future. We have been using an RCA D-77 microphone for most work.

Our mixing panel is a Mauter to which we have added a control panel which holds master switches for controlling various equipment. We use an Ampex projector to which a synchro-scope motor has been added. The Ampex, film photographs, and optical recorder can be started and stopped by a common switch.

Most of our productions are shot on panchromatic negative which has latent-image edge numbers. These edge numbers are printed to all workprints as a matter of general policy.

Various editing procedures are used, but basically we employ the following method. We screen workprints first, make notes about "keep" takes, and then run the workprint through our Moviola. The outtakes are run onto the picture pickup reel, and the keep takes are run into a bin, then rolled up on the Moviola spindle with the dates head out. Each roll is taped, numbered, and hung in sequence on a peg board. Then the rolls are spliced together and the film is screened and marked for a rough cut.

To obtain workprints of color originals, we make a duplicate negative and a positive print on which the original Kodachrome edge numbers appear. This is much faster than sending the original away.

We usually use two viewers for matching action. The tail of one shot is placed in one viewer, and the head of the next shot in the other.

Background music and sound effects are taken from a number of sources. We have a small Decca & Howles disk library. When some sound is to be laid in for rerecording, we may record from disk to a positive playback track (density 1.0). From this we can print a negative which we use as a workprint. Since our Moviola has only one sound head, we are hampered somewhat, but we can run a final check by using the film photographs and the synchronous projector as an interlock system. When the final master recording is made, we run the work-print picture which bears cue marks for the benefit of the re-recorder.

We are using Bell & Howell hot splicers and Jelberta film cement. We have begun check-rehearsing, and plan to use the technique more.

Our film laboratory was started in 1942 with the purchase of an Engineering Development Laboratories Model DM7 processing machine and a Bell & Howell Model J printer. We processed negative, reversal, and print until 1952, when we stopped processing reversal. We were dissatisfied with our duplicates

of several originals, and found in addition that the changeover from negative to reversal was too time consuming.

We are unusually fortunate in one important respect. All our chemical solutions are made for us by the University College of Pharmacy's drug manufacturing service.

At the present time we are processing Eastman Background X, Tri-X, 7374 kinoscope recording negative, 7265 duplicating negative, and du Pont 828A fine grain master positive stocks in our "negative" machine, which we have modified to run at 28 feet per minute (instead of 18). We use as a developer D16 at 68°, giving Background X and Tri X from 6 to 9 minutes, and kinoscope recording negatives from 4 to 7 minutes. For control we use a step tablet on control stock, made on an Eastman Processing Control Sautemeter. The tablets are read on a Mabeth-Arco Color Densitometer. We use grommet splices in the negative machine.

One of our two Bell & Howell Model J printers is equipped with a Paraflex. We make all our release prints on Eastman 7302 stock. We have found experimentally that we can make acceptable quick changes from A and B negative rolls. We have not yet begun color printing. Step tablets are placed at the beginning or end of each print to give us a check on gamma. Since the printers have only one head each, sound release prints are rerecorded for the second passage through the printer.

Timing is done by inspection of the negative. We now have a Cinex machine which we hope to have in operation soon for making duplicate negatives, and eventually for all work. We make duplicate negatives for all productions from which we expect a considerable volume of release printing. We believe that our present duplicate negatives give prints of adequate quality for most educational purposes.

We began operating our EDL Model DM-2 processing machine in 1954. Although it will run at 90 feet per minute, our usual speed is about 50. We use D16 developer, and process release prints picture and sound work prints, original sound tracks, and direct positive single system kinoscope recordings in this machine. The machine is unmodified except for the addition of rerecording tanks.

Because of the volume and variety of laboratory work, we have evolved the use of a system of work orders bearing serial numbers. Every piece of film is accompanied by a copy of the work order at every stage of its passage through the laboratory. Footages are measured on the printer, and the amount of footage is carefully posted

against work order numbers for billing. Departments which regularly use the services of the laboratory are billed monthly for work charged to their account numbers. The billings are handled through regular Bureau of Audio-Visual Instruction channels.

We are shooting more and more multicam footage. We can run 200 feet at a time, using a clapper at the beginning of each roll. The big problem as yet is in editing. A Moviola with these picture heads would be ideal, but at present we must run each camera picture workprint with the track, then after seeing all three pictures, decide which camera footage is to be used at any given point.

For nine weeks each fall our time Friday noon to Monday night is given over entirely to producing football films. We shoot two versions (one wide-screen) of each game, about 1900 feet each. By working through the night Saturday we have silent prints ready for delivery to coaches and television stations by noon Sunday. On Monday morning an announcer ad fills a commentary for the television releases which require sound, and these prints are on on their way to the stations on Tuesday. From Tuesday to Friday we try to get some of our other work done, but actually for a period of several weeks we all carry on in a kind of stupor to which we refer as "football daze." The final effort comes in the tenth week when we all pitch in to get out a "football highlights" film for the season. Thereafter we have a short period in which we screw up our courage to face the basketball season.

Currently we are producing a series of color films on dental techniques. Also in the mill is a series on teaching methods in the elementary schools. We are preparing two films on spoken and written French for elementary grades. In script is a project for the Iowa Commission for the Blind. The College of Medicine is sponsoring a film dealing with high speed studies of a synthetic rat. For the College of Dentistry, we are completing a film on mandibular anatomy.

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